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EXAMINER	
WOODWARD, CHERIE MICHELLE	
ART UNIT	PAPER NUMBER
1647	

NOTIFICATION DATE	DELIVERY MODE
10/14/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/828,838	KLADAKIS ET AL.	
	Examiner	Art Unit	
	CHERIE M. WOODWARD	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-14,16-21,23-27,32 and 33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-14,16-21,23-27,32 and 33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/24/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *1499 copending applications*.

DETAILED ACTION

Formal Matters

1. The Office Action mailed 9/2/2010 is VACATED in light of the amendments filed in copending application 11/427,477, over which a rejection had been made in the instant case. Additionally, the prior art found in the copending case, related to the density of the non-woven component, necessitated the instant action herein.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 8/24/2010 has been entered.

Claim Status

3. Claims 9, 15, 22, 28-31, and 34 have been cancelled by Applicant. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are pending and under examination. The prior indication of Allowability is WITHDRAWN.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 8/24/2010 has been considered by the examiner to the extent possible. Foreign language documents have been considered only insofar as their abstracts are in English. A signed copy is attached hereto. It is noted that Applicant has not provided any statement of relevancy, materiality, or any indication of the application of the references to the claims. Additionally, there is no statement as to materiality or relevancy as to any of the references cited in the listing of copending cases in the transmittal letter, which has also been considered and a signed copy is attached hereto. Applicant has made no attempt to relate the submitted documents to the issues raised and discussed in the file wrapper prosecution history. Applicant is reminded of the requirements of 37 CFR 1.56 and *Li Second Family Limited Partnership v. Toshiba Corp.*, 56 USPQ2d 1681 (Fed. Cir. 2000); accord *McKesson Information Solutions, Inc. v. Bridge Medical, Inc.* 487 F.3d 897, 913. (Fed.Cir.2007). The cited references and copending applications have been considered to the extent possible given these

shortcomings.

Claim Rejections - 35 USC § 112, Second Paragraph

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-8, 10-14, 16-18, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation "greater than about." The "greater than about" language is unclear and indefinite because the metes and bounds of the phrase are unclear as to lower limits. If there is support in the specification as originally filed, it is suggested that the claim be amended to record "greater than" or alternatively "about," but not both. Claims 2-8, 10-14, 16-18, and 32 are rejected as depending from rejected claims. Applicant is also referred to *Ex parte Miyazaki* (BPAI 11/19/2008) (Horner, APJ) (precedential). A five member expanded panel of the Board held that "if a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 USC 112, second paragraph, as indefinite." *Mizayzaki*, slip op. at 11-12.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are rejected under 35 U.S.C. 103(a) as being obvious over Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999)

The examiner finds the following facts:

a. Hayes teach biocompatible tissue scaffolds comprising nonwoven polymeric material that include bioactive agents, methods of making the nonwoven scaffolds, and methods of using the nonwoven tissue scaffolds in medical applications (columns 1 and 2; and Examples). Combinations of nonwoven tissue scaffolds with other structurally supporting material are taught at columns 25-26. Inclusion of recombinant BMPs (also known as GDFs) are taught at column 25 lines 52 and 55. Examples of nonwoven scaffolds having a density within the instantly claimed range are taught in the Table at columns 50 and 51. Particular attention should be paid to the nonwovens of Examples 7 and 9 comprising 50/50 PGA/TMC (which are taught in the instant specification at paragraph 65. The Table at column 50 shows these nonwovens to have a density in the range of 194-322 mg/cc. The requisite suture strength above about 6N is also taught in the tables.* (*The examiner notes that the density limitation in claim 3 only applies to the nonwoven portion of the scaffold and that the modulus of elasticity and suture pull-out strength (also known as the tensile strength) in the instant claims applies to the entire scaffold construct). Hayes also teach the nonwoven scaffolds that that have shear strength in excess of 1.4MPa and that can be used in conjunction with multiple other substrates (column 25, lines 29-43; column 51, lines 12-20). Hayes teach biocompatible tissue repair scaffolds made out of the same materials as the instantly claimed constructs (column 3, lines 14-61) (compare instant paragraphs 65, 96, 101, 120, 101, 108, and Examples 3 and 4).

b. Hayes does not teach a method of surgically repairing meniscal defects including positioning and fixing the tissue repair scaffold.

c. Huckle et al., teach methods of surgically repairing meniscal defects comprising providing tissue scaffolds constructed from various materials, including nonwoven materials that can be bioresorbable or nonbioresorbable (p. 3, lines 30-34 to page 4, lines 1-8); p. 9, lines 29-31; p. 11, lines 18-32). Huckle teaches biocompatible tissue repair scaffolds made out of the same materials as the instantly claimed constructs, for example, polylactides, polyglycolides, and polydioxanone (page 3, lines 33-35 to page 4, lines 5-12). Preferred embodiments of materials are taught at page 8, lines 34-35 to page 9, lines 5-18) (compare instant paragraphs 65, 96, 101, 120, 101, 108, and Examples 3 and 4). Scaffold reinforcements are taught at page 14. The thickness of the scaffold is taught as being between 0.25 to 5 mm thick, depending on the intended use (p. 11, lines 30-31). Implantation of the scaffold at the site of a tissue defect using any surgical technique is taught at p. 5, first and second paragraphs (compare instant claim 33). Example 5 (p. 20) teaches a method of surgically implanting a scaffold over a meniscus (see also p. 4, second paragraph). The inclusion of biological molecules such as GDF5 (page 12, line 12; p. 4, lines 20-21; p. 12, lines 7 and 8; p. 4, third paragraph, and p. 12, first full paragraph). Dry laid nonwoven material is taught at p. 11, lines 25. Random entanglement is taught as providing a large surface area for cell attachment or capture during cellular in-growth (p. 11, lines 26-27). Example 7, pp. 20-23, teach dry laid nonwoven yarn produced by feeding it into a stuffer box type crimping unit (p. 20, line 35 to p. 21, first paragraph). Example 7 also teaches heat-setting at p. 21, third and fourth paragraphs. Example 5 (p. 20) teaches implanting scaffold over a menicus (see also p. 4, second paragraph). Scaffolds comprising cells and tissue are taught at Examples 5 and 6, p. 20) (see instant claims 15 and 28). Tissue grafts are also taught at p. 5, first paragraph. The inclusion of biological molecules such as TGF, BMP, CDMP, and PDGF are taught at p. 4, third paragraph (see instant claims 26 and 27).

d. Bowman et al., teach a method of treating meniscal defects by implanting a biocompatible tissue repair scaffold (p. 1, paragraphs 10 and 14; claims 1, 2, 17, 18, and 20). The nonwoven scaffolds taught by Bowman include 90:10 PGA/PLA nonwoven and 60:40 PLA/PCL foam at Example 6, especially paragraph 115; and Example 1 (compare paragraph 120 of the instant specification teaching a 10:90 PLA/PGA (also read as 90:10 PGA/PLA ratio). The suture pull-out strength on day zero of a foamed mesh scaffold is taught as being in the range of 5.7 +/- 0.3 (which is read as being in the range of greater than about 6N) (Table 1, paragraph 92).

Thickness in the range of about 0.5mm to 1.5mm is taught at p. 8, paragraph 75. Bowman et al., teach that tendon or ligament ends can be joined by suturing, stapling, clipping, adhering, or anchoring the scaffold to ends of the implant, (paragraph 80). The addition of a bioactive substance such as cartilage derived morphogenic proteins (CDMPs) (also known as growth differentiation factors) are taught at pages 4-5, paragraph 43, and claims 2, 7, and 20. The scaffold comprising a bioabsorbable polymeric foam having pores with an open cell structure that is joined or reinforced by a material to contribute enhanced mechanical and handling properties is taught at p.2, paragraph 23 and p. 4, paragraph 42. Non-woven biocompatible bioabsorbable reinforcing material is taught at p. 4, paragraph 38. Nonwoven reinforcing material comprising synthetic polymeric blends of polylactides and glycolides are taught at pp. 2-3, paragraph 28; and p. 4, paragraph 40. Copolymers of polycaprolactone-polyglicolide, from about 35/65 to about 65/35 and polylactide-polycaprolactone from about 35/65 to about 65/35 are taught at p. 3, paragraph 32 (compare the instant composition at Example 4, which includes a 3565 PGA/PCL foam plus 0.5ml PRP). The reinforcing component of the scaffold can be a non-woven material and the fibers used to make the reinforcing material can be made of biocompatible and biodegradable materials such as polydioxanone (p. 4, paragraph 38), 90/10 polyglycolide-polylactide (p. 7, paragraph 66). Nonwoven fibrous fabric produced by electrospinning is taught at p. 8, paragraph 74; and Example 4, pp. 10-11, paragraphs 106-110. The ability to align fibers or orient fibers randomly (meeting the definition of isotropic in instant claim 18) are both inherent processes of electrospinning. Addition of a bioactive substance such as cartilage derived morphogenic proteins, which belong to the TGFβ family, some of which are known as bone morphogenic proteins, and platelet-derived growth factor (PDGF) are taught at pp. 4-5, paragraph 43 (see instant claims 13 and 14). PDGF is an inherent component of platelet-rich plasma, which is a concentrate of platelets in a small volume of plasma and therefore concentrate of the 3 isomers of PDGF (PDGFαα, PDGFββ and PDGFαβ). Therefore, by incorporating platelet-rich plasma into a scaffold implant, one inherently incorporates platelets and PDGF. The addition of cells, such as chondrocytes to the scaffold are taught at p. 5, paragraph 47; and p. 11, Example 6. Bowman teaches that tendon or ligament ends can be joined (e.g., by suturing, stapling, clipping, adhering, or anchoring) to ends of the implant, (paragraph 80). Bowman teaches heat pressing the nonwoven polymeric material prior to its placement within the mold in order to ensure the proper degree of flatness (paragraph 64).

e. Brekke teaches a porous tissue scaffold formed of a bioresorbable, synthetic polymer, at Figures 1-4 and column 5, lines 6-15. The implant of Brekke comprises at least one pocket or void (column 7, lines 37-40). Brekke teaches the pockets or voids comprise cells and viable tissue that is ground (which also reads on minced) with the cells capable of migrating into the scaffold's structure (column 10, lines 19-21 and 42-47). The voids cause the implant to have hollow interior sections or lumens. The cells are used with growth factors to enhance their reproduction to form their extracellular matrix in the scaffolds (column 10, lines 31-37). Brekke additionally teaches use of harvested tissue (column 10, lines 54-67). It is noted that a change in shape or form is recognized as being within the skill of a normal artisan in the art, absent any showing of unexpected results. *In re Dailey* et al., 149 USPQ 47. Brekke also teaches the implant can include a bioactive substance including growth factors (column 10, lines 29-42). It is also noted that any 3-dimensional object inherently has top and bottom portions which are arbitrary. Brekke also teaches that the tissue placed in the pocket or voids can be construed to be minced, sliced or slivered (column 6, lines 1-4; column 10, lines 13 and 14). Figures 5 and 6 of Brekke show the step of loading viable tissue into the pockets of the tissue scaffold. Brekke discloses the step of implanting at column 12, line 3. Brekke teaches that the tissue size can be optimized to the desired need of the patient (column 11, lines 14 and 15).

f. "It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960) (Claims directed to a method and material for treating cast iron using a mixture comprising calcium carbide and magnesium oxide were held unpatentable over prior art disclosures that the aforementioned components individually promote the formation of a nodular structure in cast iron.).

g. Young's Modulus (MPa) is defined as the linear proportional constant between stress and strain and the ultimate tensile strength (N/mm) is defined as a measurement of the strength across the prosthesis (see, for exemplary purposes only, Bilbo et al., ('177 publication) at paragraph 61).

h. Tensile strength is an intensive property and consequently does not fluctuate when the amount of test material is increased or decreased. However, the property is dependent on the preparation of the specimen and the temperature of the test environment and material.

i. Tensile strength and Young's Modulus are properties are a function of the scaffold itself and are testable parameters. All of the references teach testing of these parameters as being routine. Additionally, it is well known in the art that tensile strength is dependent on the concentration of the polymer comprising the composition. "As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith") *In re Brown*, 59 CCPA 1036, 459 F.2d. 531, 173 USPQ 685 (CCPA 1972) (holding at 1041, and Ex parte Gray, 10 USPQ 2d 1922, 1924-25 (PTO Bd. Pat. App. & Int.). Absent evidence to the contrary, the burden is on Applicant to show the different between the method and scaffolds taught in the prior art and the instantly claimed method and scaffolds.

j. A person of ordinary skill in the art at the time of the instant invention would have reasonably known that nonwoven scaffolds with the instantly claimed density were known in the prior art. Hayes plainly teaches how to make and use nonwoven scaffolds with the requisite densities. Hayes also teaches how to test the scaffolds for the requisite physical properties and that these tests are routine in the art

k. A person of ordinary skill in the art at the time of the instant invention would have reasonably known that the nonwoven scaffolds of the claimed density could be matched with various with other structurally supporting material including foams, collagen, and other materials taught by Hayes, Huckle, and Bowman and that these other materials could be routinely optimized to provide the needed strength for the particular application for which they were used, as taught by Hayes and specifically for mensical repair, as taught by Huckle and Bowman.

l. A person of ordinary skill in the art would have reasonably known that when used as a load bearing or support device, the scaffold should be able to withstand the rigors of physical activity during the initial healing phase and throughout remodeling. Further, with regard to biodegradable tissue repair scaffolds, the modulus of elasticity and suture pull-out strength (tensile strength) parameters will vary in any biodegradable polymeric composition as a factor of time and depending on the concentration of the polymer comprising the composition. See, for example, instant Figures 6A and 6B, show significantly different maximum load (suture pull-out/tensile strength) and different stiffness (modulus of elasticity) over a period of 2 weeks.

In view of the facts recited above, it would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to combine the prior art elements according to known

methods to yield predictable results. The prior art teaches all of the limitations of the claimed invention, as set forth above. All three references teach the same subject matter; methods and constructs comprising biocompatible tissue repair scaffolds. All three references also teach nonwoven scaffolds comprising the same material as set forth in the instant application, as set forth above. Hayes teach nonwoven polymeric materials with the claimed densities and suture pull out strength. Hayes also teach nonwoven scaffolds that that have shear strength in excess of 1.4MPa and that can be used in conjunction with multiple other substrates. The references also teach biocompatible tissue repair scaffolds made out of the same materials as the instantly claimed constructs The examiner notes that the density limitation in claim 3 only applies to the nonwoven portion of the scaffold and that the modulus of elasticity and suture pull-out strength (also known as the tensile strength) in the instant claims applies to the entire scaffold construct.

The person of ordinary skill in the art would have been motivated to combine the references to generate a biocompatible scaffold used in a method of surgically repairing meniscal defects comprising a nonwoven material with a density in the claimed range to produce a stronger implant that contribute enhanced mechanical and handling properties of the implant, thus allowing increased support for the implant while the patient is healing.

The person of ordinary skill in the art could have combined the elements as claimed by known methods to produce scaffolds with the requisite physical properties, properties taught by the scaffolds of the prior art (see all three references), that are suitable for use in methods of surgically implanting meniscal repair devices, as taught by Huckle and Bowman. One of skill in the art would have recognized that the results of the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time the invention was made. Further, one of skill in the art reasonably would have expected success because all three references teach nonwoven scaffolding material used in conjunction with other materials to provide superior strength for the implant and Hayes specifically teach nonwoven scaffolds, methods of making them, and methods of using them, with the requisite

It would have also been *prima facie* obvious to the person of ordinary skill in the art at the time the invention was made to combine the teachings of the above cited prior art references to produce a biocompatible scaffold comprising a nonwoven polymeric material from a dry laid polymer in order to reinforce a foam scaffold where the combined foam and nonwoven scaffold provides increased suture-pull out strength. The person of ordinary skill in the art would have been motivated to make those modifications because bioabsorbable polymeric foams that are reinforced by a nonwoven material produce a stronger implant that contribute enhanced mechanical and handling properties of the implant, thus allowing increased support for the implant while the patient is healing. Additionally, Huckle teaches

that random entanglement in the nonwoven scaffold provides a large surface area for cell attachment or capture during cellular in-growth. One of skill in the art reasonably would have expected success because Huckle teach nonwoven scaffolds used in conjunction with foams to provide superior strength for the implant. .

It would have also been *prima facie* obvious to a person of ordinary skill in the art at the time of the instant invention to use viable tissue, including minced, sliced, and strips in view of the teachings of Brekke, above. The person of ordinary skill in the art would have been motivated to add viable tissue to the implant in order to promote cell growth into the implant and to promote cell growth out of the implant to restore the tissue structure back to some semblance of the original structure prior to the damage incurred, that would necessitate a scaffold implant. Brekke expressly provides the motivation to combine in teaching that the cells are used with growth factors to enhance their reproduction to form their extracellular matrix in the scaffolds (column 10, lines 31-37). One of skill in the art reasonably would have expected success because of the success of Brekke.

Obviousness Type Double Patenting Rejections

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Applicant is reminded that MPEP § 804 (II) states, "When considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. *General Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992). "This does not mean that one is precluded from all use of the patent disclosure." (Emphasis added). "Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. *In re Vogel*, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970)."

13. Applicant is also reminded that the merits of a provisional obviousness-type double patenting rejection can be addressed by both the applicant and the examiner without waiting for the first patent to issue. *In re Mott*, 539 F.2d 1291, 190 USPQ 536 (CCPA 1976); *In re Wetterau*, 356 F.2d 556, 148 USPQ 499 (CCPA 1966).

14. Further, Applicant is reminded that "[i]t is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted) (Claims to a process of preparing a spray-dried detergent by mixing together two conventional spray-dried detergents were held to be prima facie obvious.). See also *In re Crockett*, 279 F.2d 274, 126 USPQ 186 (CCPA 1960) (Claims directed to a method and material for treating cast iron using a mixture comprising calcium carbide and magnesium oxide were held unpatentable over prior art disclosures that the aforementioned components individually promote the formation of a nodular structure in cast iron..

15. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6, 8, and 10 of U.S. Patent No. 6,884,428 (26 April 2005, benefit to 16 December 2002) in view of Hays, US Patent 6,165,217 (26

December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), and Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999).. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '428 patent. Hayes, Huckle, Bowman, and Brekke teach as set forth above. A direct claim comparison of the instant claims and claims of the '428 patent demonstrate the overlapping and obvious relationship between the patent and the instant application. Additional features and teachings are also found in the specification of the '428 patent to render the instant invention obvious over the claims of the '428 patent, especially in light of the prior art teachings of Hayes, Huckle, and Bowman.

16. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 8 of U.S. Patent No. 6,852,330 (8 February 2005, benefit to 21 December 2000) in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '330 patent. Hayes, Huckle, Bowman, and Brekke teach as set forth above. A direct claim comparison of the instant claims and claims of the '330 patent demonstrate the overlapping and obvious relationship between the patent and the instant application. Additional features and teachings are also found in the specification of the '330 patent to render the instant invention obvious over the claims of the '330 patent, especially in light of the prior art teachings of Hayes, Huckle, and Bowman.

17. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 7-9, and 13-16 of U.S. Patent No. 6,599,323 (29 July 2003) in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record) and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of

biocompatible scaffolds taught in the '323 patent. Hayes, Huckle, Bowman, and Brekke teach as set forth above. A direct claim comparison of the instant claims and claims of the '323 patent demonstrate the overlapping and obvious relationship between the patent and the instant application. Additional features and teachings are also found in the specification of the '323 patent to render the instant invention obvious over the claims of the '323 patent, especially in light of the prior art teachings of Hayes, Huckle, and Bowman.

18. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 8-11 of copending Application No. 11/856,743, in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '743 application. Hayes, Huckle, Bowman, and Brekke teach as set forth above. The conflicting claims of the instant application and the '743 application are drawn to tissue repair/growth devices comprising a biocompatible and biodegradable scaffold permitting cell in-growth. Additionally, compare paragraph 36 and Figure 5 of the '743 application with instant Figures 1A, 1B, 2A, 2B and paragraph 51 (p. 8 of the specification).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 7-9, 12, and 13 of copending Application No. 11/856,741, in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '741 application. Hayes, Huckle, Bowman, and Brekke teach as set forth above. The conflicting claims of the instant application and the '741 application are drawn to tissue repair devices comprising a biocompatible and biodegradable scaffold permitting cell in-

growth. Also, compare the instant specification at paragraphs 66 and 67 (p. 12-13) regarding allogenic and autogenic tissue and the inclusion of fibrin.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-6, 13-18, 20-21, 42-47 of copending Application No. 10/775,034, in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '034 application. Hayes, Huckle, Bowman, and Brekke teach as set forth above. The conflicting claims of the instant application and the '034 application are drawn to tissue repair/growth devices comprising a biocompatible and biodegradable scaffold permitting cell in-growth. .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claim 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 6-15, 30-37 of copending Application No. 10/828,841 in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record) and Brekke, US Patent 6,005,161 (21 December 1999).. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '743 application. Hayes, Huckle, Bowman, and Brekke teach as set forth above. The conflicting claims of the instant application and the '743 application are drawn to tissue repair/growth devices comprising a biocompatible and biodegradable scaffold permitting cell in-growth. .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

22. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7, 9, 10, 12, 14-19, and 28 of copending Application No. 10/729,046 (allowed 10/7/2010), in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '046 application. Hayes, Huckle, Bowman, and Brekke teach as set forth above. The conflicting claims of the instant application and the '046 application are drawn to tissue repair/growth devices comprising a biocompatible and biodegradable scaffold permitting cell in-growth. .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

23. Claims 1-8, 10-14, 16-21, 23-27, 32, and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 98-119 of copending Application No. 10/374,772, in view of Hays, US Patent 6,165,217 (26 December 2000), Huckle et al., WO 01/85226 (published 15 November 2001) (previously cited of record), Bowman et al. (U.S. Patent Application Publication US 20020127265, 12 September 2002) (previously cited of record), and Brekke, US Patent 6,005,161 (21 December 1999), as well as Vyakarnam et al (US Patent 6,534,084), Albrecht et al., (Arch. Orthop. Trauma Surg. 1983:213-217), Naughton et al., (US Patent 5,842,477), and Chvapil (US Patent 5,078,744). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are a species that anticipate the genus of biocompatible scaffolds taught in the '772 application. Hayes, Huckle, Bowman and Brekke teach as set forth above.

Vyakarnam teach a porous, biocompatible tissue implant suitable for tissue engineering applications (abstract, summary of the invention, column 12, first paragraph) comprising a biocompatible scaffold such as a three-dimensional interconnected open cell porous foams that have a gradient in composition and/or microstructure through one or more directions; wherein the foams are used as scaffolds and can be made from a blend of adsorbable and biocompatible aliphatic polymers (such as copolymer of 95:5 lactide and glycolide, and alternatively with a mesh component made of a polydioxanone and the foam component made of 35:65 ε-caprolactone and glycolide (Figures 7 A-C-c;

column 6, second and third paragraphs; column 7, third and fourth paragraphs). Vyakarnam teaches an implant wherein the implant includes natural polymers such as collagen incorporated in the inner portion of the scaffold (column 17, lines 43-49). Vyakarnam also teaches implant that can also comprise ceramic materials (such as calcium phosphate; (column 13, third paragraph, and column 17, lines 37-43). Vyakarnam teaches an implant wherein the scaffold has an open pore structure with pores having a size sufficient to allow cells and tissue in-growth (abstract, summary of the invention, column 19, first and second paragraphs); wherein the mesh is a knit or a woven structure, and wherein the mesh is biodegradable and biocompatible (column 7, third paragraph; column 8, second paragraph, column 14, last paragraph). The scaffold further comprising at least one additional biological component applied thereto, and wherein the at least one biological component comprises growth factors (column 17, lines 37-65 and column 18, first and last paragraphs). Additionally, Vyakarnam teaches a biocompatible implant wherein various types of cells can be seeded and grown on the polymeric scaffold in order to generate a gradient structure suitable for tissue repair and replacements, including connective tissues such as tendons and ligaments.

However, a biocompatible tissue repair implant comprising a first biocompatible scaffold and tissue fragments (i.e., cartilage or collagen processed under aseptic conditions) having viable cells (being capable of migrating out of the tissue fragments), wherein said tissue fragments have a size of about 0.1 mm3 to about 3 mm3, and wherein the tissue implant has been incubated (under conditions such as duration, temperature and humidity, as specifically recited in instant claims 100-102) is not explicitly disclosed by the invention of Vyakarnam.

Albrecht teaches a biocompatible implant comprising collagen foam or fibrin adhesive, or a combination of both along with fine minced cartilage tissue (including the viable cells contained therein) and an additional biological component such as thrombin enzyme used in the closure of osteochondral lesions or defects of 4 mm diameter in experimental animals (summary at page 213, and materials and methods, page 214). Albrecht teaches an implant comprising a plastic plug of fibrin adhesive with very small cartilage tissue fragments (i.e. autologous cartilage tissue) with or without a natural polymer such as porous collagen foam (commercial preparation; Tachotop, Hormonchemie, Munich; see Albrecht, page 214, materials & methods, in particular) and additional biological component such as thrombin enzyme. Albrecht et al teach the surgical implantation to repair the defect site wherein the implanted cartilage cells undergo proliferation and in and around the implanted porous scaffold in order to affect tissue remodeling and new cartilage formation (Albrecht, page 217, first column).

Naughton teaches an implant and a method for repairing cartilage *in vivo* using a biocompatible, non-living three-dimensional scaffold or framework structure in combination with periosteal/perichondrial tissue that can be used to hold the scaffold in place and provides a source of viable cells such as chondrocytes progenitor cells, chondrocytes, and other stromal cells for attachment to the scaffold *in vivo* as well as additional components such as use of fibrin glue (i.e. an adhesion agent) in order to fix the implanted tissue (from autologous as well as heterologous sources, preferably autologous sources) at the defect site (Naughton et al, abstract, summary of the invention, column 7, third and fourth paragraphs; entire columns 8-10; and claims). Additionally, Naughton teaches the implantation of the scaffold along with the tissue fragments in to the defect site that can be sutured and closed in various layers having cells/tissue disposed within the scaffold (Naughtonl, column 17, first and second paragraphs; column 20, second and third paragraphs.
Chvapil discloses a method of repairing connective tissue using a heterograft scaffold for supporting ingrowth of ligament or tendon in order to replace damaged connective tissue in a subject, wherein seeding autologous tissue pieces and cells (such as tenoblasts) obtained under sterile (i.e. aseptic) conditions and are cultivated in tissue culture media, and injected into the scaffold material (see column 5, second paragraph).

It would have been *prima facie* obvious to a person of ordinary skill in the art at the time this invention was made to substitute the biological component (viable cells used with the implant comprising the scaffold material of Vyakarnam et al with tissue fragments (i.e. cartilage or collagen tissue fragments) that have been obtained under aseptic conditions, and can be incubated with the scaffold material under routine cultivation conditions, as disclosed explicitly by the inventions of Albrecht, Naughton, and Chvapil (see the teachings as discussed, *supra*). The person of ordinary skill in the art would have been motivated to make such modification and substitution in the tissue repair implant comprising biocompatible scaffold of Vyakarnam because both Albrecht and Naughton, as well as Chvapil provide the benefits (such as anchoring functions, acting as a source of viable cells such as chondrocytes, stromal cells, growth factors, and immunological compatibility; see Naughton, abstract, in particular) of using tissue fragments along with additional component such as an adhesive agent (i.e. fibrin glue/adhesive) in the procedure of tissue repair using such implants (see Albrecht, summary, in particular; also see Chvapil, column 5, in particular). One of ordinary skill in the art would have had a reasonable expectation of success in making such modification in the tissue repair implant of Vyakarnam et al because the combined disclosures of Albrecht, Naughton, and Chvapil, provide aseptic methods for making (along with the method for populating the scaffold with cells or cell sources) and using such surgical implants

comprising minced tissue fragments (containing viable cells) in the repair of osteochondral lesions or damaged cartilage tissue.

The limitations of size of tissue fragments (i.e. the size ranges of tissue fragments, about 0.1 mm^3 to about 3 mm^3 used in the scaffold) would have been obvious to a person of ordinary skill in the art at the time this invention was made as evident by the fact that Naughton teaches (columns 10-11) the preparation of mechanically minced tissue suspension, and preparation/disaggregation of cartilage tissue by the use of proteolytic enzymes such as collagenase or trypsin (which is similar to the disclosure provided by the applicant for preparation of the tissue fragments and cultivation conditions; see instant disclosure, page 41, Example 1). The size limitations would have been obvious to an artisan of ordinary skill in the art as evidenced by the fact that Albrecht disclose the use of "very small" minced cartilage tissue fragments to fill a defect size of 4 mm diameter in subjects in need thereof, and therefore, it would be reasonable to presume that the minced fragments are in fact in the size range of less than 4 mm. Thus, in the absence of any evidence to the contrary, an artisan of ordinary skill would have had a reasonable expectation of success in using the tissue fragments in the range of about 0.1 mm^3 to about 3 mm^3, as recited in instant claim 98 in order to achieve a better implant for repair of cartilage defects as demonstrated by the disclosures of Albrecht taken with Naughton. Similarly, the use and arrangement of a second scaffold, such that tissue fragment is disposed between at least two biocompatible scaffolds, would have been obvious to a person of ordinary skill in the art as evident by the fact that Naughton et al teach the implantation of the scaffold along with the tissue fragments in to the defect site that can be sutured and closed in various layers having cells/tissue disposed within the scaffold (see Naughton, column 20, second and third paragraphs).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

NO CLAIM IS ALLOWED.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHERIE M. WOODWARD whose telephone number is (571)272-3329. The examiner can normally be reached on Monday - Friday 9:30am-6:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol can be reached on (571) 272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Cherie M. Woodward/
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